REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-3 and 6-24 are pending in the present application. Claims 4 and 5 are cancelled and Claim 7 is amended by the present amendment.

In the Office Action of January 20, 2004, Claims 1-3 and 11 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosencher et al. (U.S. Patent No. 5,086,327, herein "Rosencher") in view of Katoh (U.S. Patent No. 5,041,882); Claims 13, 14, 15, 18, 23, and 24 were rejected as unpatentable over Rosencher in view of Katoh; and Claims 6 and 12 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosencher, Katoh, and Nanbu (Japanese Patent No. 61054673 A).

Applicants thank Examiner Brock for the courtesy of a telephonic discussion extended to Applicants' representative on April 23, 2004. During the interview Examiner Brock recommended canceling Claims 4 and 5 to place this application in condition for allowance. Accordingly, the present amendment cancels Claims 4 and 5. In addition, the present amendment amends Claim 7 to depend on Claim 1 instead of Claim 5 (now cancelled).

Further, it is respectfully submitted that the claim rejections presented in the Office Action of January 20, 2004, are moot because, as discussed in the previously filed Amendment, no suggestion or motivation has been noted in Rosencher and Katoh to meet the claim limitations. Moreover, the device in Rosencher is directed to electromagnetic wave detectors that use quantum physics effects (see column 1, lines 7-9), while the device in Katoh is directed to a heterojunction bipolar transistor that does not involve any quantum physics effects (see

Abstract). Therefore, it is not clear how one of ordinary skill in the art would combine the devices of Rosencher and Katoh that use different principles of operation (quantum physics and classical physics, respectively). Further, there is no expectation provided in either of the reference that such a modification as proposed by the Office Action of January 20, 2004, would lead to any benefits of the wave detector in Rosencher.

Furthermore, as discussed during the interview of March 24, 2004, Katoh discloses at column 3, last paragraph, and shows in Figure 4, the upper part of the drawing, that a β parameter has a ***constant value*** and the corresponding concentrations of P and As in the base of a transistor (transfer barrier) are ***constant*** because the concentrations of P and As are proportional to β and $1-\beta$, respectively.

In addition, the layer in Katoh that is asserted in the Office Action of January 20, 2004, as having a component with a concentration that varies linearly is a base layer of a transistor, which does not have an equivalent function as the transfer barrier layer in Rosencher.

Further, as also discussed in the previously filed Amendment, Katoh states at column 3, line 66, to column 4, line 6, that "composition grading is also applied to the base layer." However, the composition grading disclosed in Katoh involves changing the chemical structure of the base layer completely, as disclosed at column 3, lines 65-66, i.e., from $Ga_{0.47}In_{0.53}$ at one end of the base layer, where the parameter β is 0, to InP at the other end of the base layer, where the parameter β is 1. In view of this radical "composition grading" in Katoh, Applicants respectfully submit that it is not clear how one of ordinary skill in the art would modify the barrier layer 4 in Rosencher to achieve the "composition grading" of Katoh as Rosencher

specifically discloses at column 4, line 53, a ***uniform chemical composition*** of the barrier layer 4.

Furthermore, Applicants respectfully submit that a metastable level is a physical property of a specific material and not an intended use property or a method of using the property as asserted in the Office Action of January 20, 2004. Thus, Applicants respectfully submit that not all materials have a metastable level, but only certain materials have that property. Rosencher and Katoh are silent whether the materials used in their devices have a metastable level.

Regarding independent Claim 13, the Office Action of January 20, 2004, recognizes at page 5, lines 8-9, that "Rosencher does not teach that first and second ohmic contacts are located at the electron storage layer." The Office Action of January 20, 2004, relies on Figure 1 of Nanbu for teaching that feature. However, Applicants respectfully submit that Nanbu shows in Figure 1 electrodes 4 and 5 that are not in direct contact with a layer 10, as required in Claim 13, but to the contrary, an electron supply layer 3 is clearly formed between the electrodes 4 and 5 and layer 10 in Nanbu.

Therefore, Applicants respectfully submit that Claims 1-3 and 6-24 patently distinguish over the applied art.

In addition, Applicants note that withdrawn Claims 8, 9, 10, 16, 17, 19, 20, 21, and 22 should be reinstated as they dependent directly or indirectly from independent Claims 1 and 13, and thus independent Claims 1 and 13 are generic.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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